

Amendments In the Specification

Please replace the second full paragraph on page 4 with the following amended paragraph:

Figure 3 is a block diagram of a single tap of a ~~one~~ four dimensional equalizer and far end cross talk canceller in accordance with the present invention.

Please replace the third full paragraph on page 4 with the following amended paragraph:

Figure 4 is a block diagram of a single tap of a ~~four~~ one dimensional equalizer known in the prior art.

Please replace the abstract with the following:

A multidimensional equalizer and cross talk ~~caneeler~~ canceller for a communication network that simultaneously removes far end cross talk (FEXT) and intersymbol interference (ISI) from a received signal. A multidimensional-pair channel is treated as a single multidimensional channel and a receiver in the communication network equalizes received signals through the use of the multidimensional equalizer. A decision feedback equalizer determines a multidimensional steepest descent gradient to adjust matrix coefficients, ~~that are proportional to estimates of~~

$\frac{\partial e_n}{\partial Q_k^{i,j}}$, wherein $Q_k^{i,j} \leftarrow \left(Q_k^{i,j} - \mu \left(\frac{\partial e_n}{\partial Q_k^{i,j}} \right) \right)$

and

$$\frac{\partial e_n}{\partial Q_k^{i,j}} = 2 \left(Z_n^i X_{n-p}^i \right) Y_{n-k}^j$$

The equalizer includes:

a vector data unit delay operator that passes the received data vector Y_n through a series of unit delay operators to generate successive tap input data $Y_n, Y_{n-1},$

$Y_{n-2};$

a first matrix multiplication operator that receives a $1 \times N$ matrix Y_{n-k} from the unit delay operator and multiplies it with the $N \times 1$ matrix of scaled vector error data $(Z_n - X_n)$ to generate a $N \times N$ adjustment matrix;

~~a matrix summation operator that adds the adjustment matrix to a Q_{n-k} tap matrix and outputs a corrected tap matrix Q_{n-k+l} ;~~

~~matrix tap unit delay operator that receives the corrected tap matrix Q_{n-k+l} , and introduces a one cycle delay to generate a Q_{n-k} tap matrix; and~~

~~a second matrix multiplication operator that multiplies the Q_{n-k} tap matrix from the matrix tap unit delay operator by the Y_{n-k+l} vector from the vector data unit delay operator.~~

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Cancel